REMARKS

Claims 1-19 are all the claims pending in the application.

Claims 1-19 are pending in the application. Applicant adds new claim 20. Claim 1 is rejected under 35 U.S.C. § 102(b) as being anticipated by Inui et al. (JP401245371A) ("Inui"). Claim 2 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Inui in view of Naoi (U.S. Patent No. 6,005,976) ("Naoi"). Claim 10 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Inui and Naoi as applied to claim 2 above, and further in view of Hsu (U.S. Patent 6,151,424) ("Hsu"). Claims 3-9, and 11-14 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Applicant adds new claim 20 to more particularly claim the invention and to submit the following arguments to traverse the prior art rejections.

Applicant's invention relates to a shape descriptor extracting method based on an image skeleton, in an embodiment. The embodiment includes extracting a skeleton from an input image, obtaining a list of straight lines by connecting pixels based on the image skeleton, and determining the regularized list of straight lines obtained by normalizing a list of straight lines as the shape descriptor.

Inui relates to a shape describing device to hierarchically structure and describe a shape by receiving a broken line signal and an intersecting point signal and applying a feature information signal for expressing a shape in each smoothing level respectively to a broken line and an intersecting point.

Naoi relates to an image extraction system for extracting characters, graphics, and the like which touch a character frame, a rule and the like in a hand-written character recognition apparatus such as an optical character reader.

Hsu relates to object and feature identification in an image. Specifically, Hsu teaches the use of color perception an multi-level resolution to perform scene segmentation and object/feature extraction in the context of self-determining and self-calibrating modes. Only a single image, instead of multiple images as the input, is used to generate segmented images.

Prior art rejections under § 102(b)

Claim 1 is rejected under § 102(b) as being anticipated by Inui. Claim 1 is cancelled without prejudice or disclaimer.

Prior art rejections under § 103(a)

Claim 2 is rejected as being unpatentable under Inui in view of Naoi. Claim 2 is patentable because the combination of references, individually, or in combination, fails to teach, suggest, or provide motivation for a step of extracting a skeleton of an input image and obtaining a first list of straight lines by connecting pixels based on the extracted skeleton. Naoi discloses that *first*, the straight lines are detected (col. 14, lines 36-38) and *then*, a frame is extracted (col. 14, lines 35-36, and lines 48-49) and the skeleton of the frame is obtained (col. 18, lines 14-15), in an order which is *reversed* to what is claimed. Nowhere in Naoi, or in Inui, is there any teaching of extracting a skeleton from an input image and then obtaining a first list of straight lines.

Further, nowhere in the references is there any teaching, suggestion, or motivation for determining a second list of straight lines obtained by normalizing the first list of lines as a shape

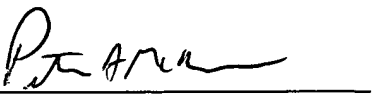
descriptor. Although Naoi discloses "second means for determining the straight lines which form the frame depending on intervals of candidates of the straight lines forming the frame obtained by the first means," (col. 5, lines 22-25), Naoi *does not* disclose normalizing the straight lines obtained by the first means to determine the straight lines obtained by the second means. In fact, Naoi discloses that the straight line extracting parts 3 and 4, *independently* extract straight lines from the connected pattern extracting part 1 (col. 8, lines 5-28; and FIG. 4).

Claim 10, which depends from claim 2, is patentable for the above arguments for claim 1 and because Hsu fails to make up for the deficiencies of Inui and Naoi.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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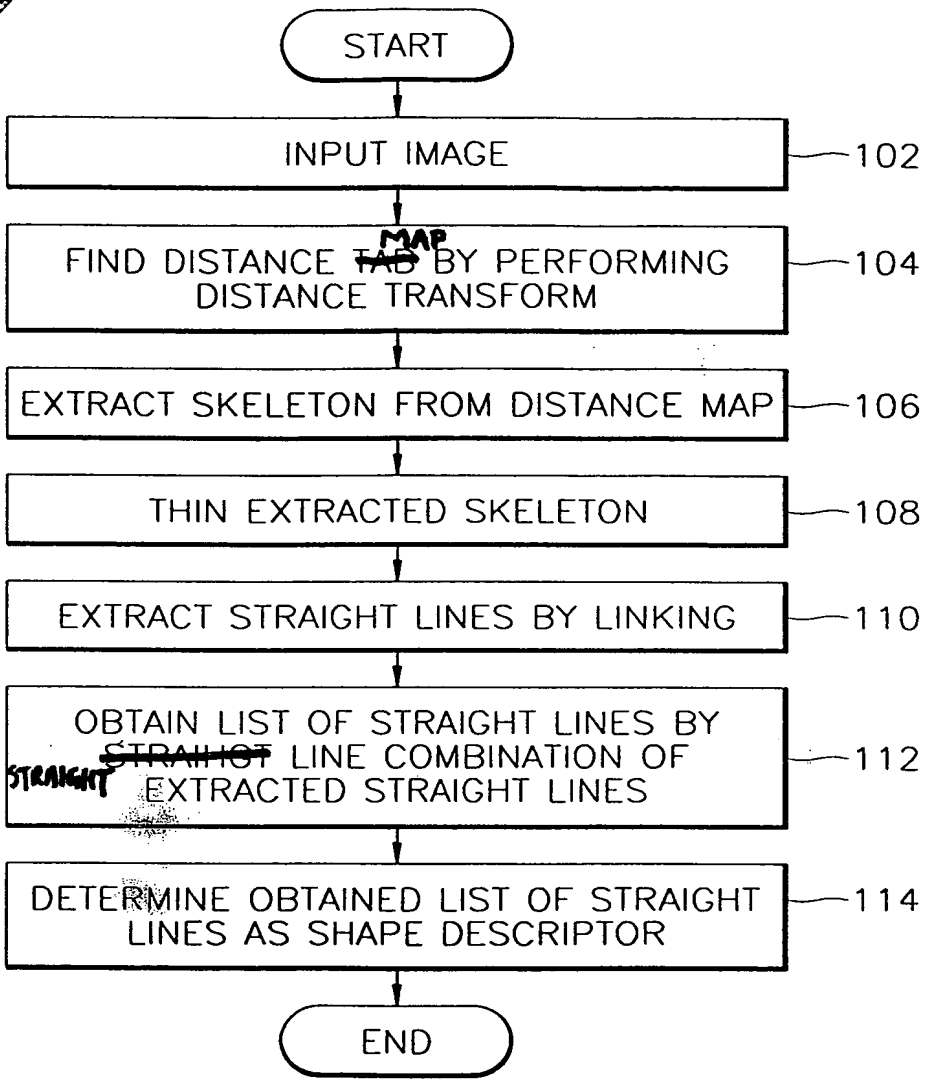
FIG. 1